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CURRENT ISSUES AFFECTING THE MINERAL EXTRACTION PROCESS AT THE TYUBEGATAN MINE

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Abstract. *The research examines the environmental impact of expanding dump sites in mining complexes, with a focus on the Tyubegatan mine and Dehkanabad Potash Plant (DPP). Key findings highlight the presence of 3.5-5.5% valuable components in waste from enrichment plants, emphasizing the need for improved storage and disposal methods. The study assesses the hydrogeological and geological conditions, noting underground saline waters and two primary waste types: mined salt and salt waste from the DPP. Results reveal an approximate total waste volume of 4.78 million tons, recommending permanent geodetic surveys for monitoring, especially in summer, to control dust. The study stresses that managing expanding dump sites is essential to mitigate environmental damage, advocating for separate handling of valuable waste for future use and sustainability.*

Keywords: *mining, overturning, surveying services, hydrogeological conditions.*

АКТУАЛЬНЫЕ ПРОБЛЕМЫ, ВЛИЯЮЩИЕ НА ПРОЦЕСС ДОБЫЧИ ПОЛЕЗНЫХ ИСКОПАЕМЫХ НА ШАХТЕ ТЮБЕГАТАН

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Аннотация. *Исследование посвящено влиянию расширяющихся отвалов на окружающую среду в горнодобывающих комплексах, с акцентом на рудник Тюбегатан и Дехканабадский калийный завод (ДКЗ). Основные выводы указывают на наличие 3,5-5,5% полезных компонентов в отходах обогатительных фабрик,*

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подчеркивая необходимость улучшения методов их хранения и утилизации. В исследовании анализируются гидрогеологические и геологические условия, отмечаются подземные соленые воды и два основных типа отходов: добытая соль и солевые отходы ДКЗ. Результаты показывают, что общий объем отходов составляет около 4,78 миллиона тонн, и рекомендуют постоянные геодезические наблюдения, особенно летом, для предотвращения запыления. Исследование подчеркивает важность управления растущими отвалами для снижения вреда окружающей среде и предлагает раздельную утилизацию полезных отходов для их будущего использования и устойчивого развития.
Ключевые слова: *добыча полезных ископаемых, опрокидывание, геодезические услуги, гидрогеологические условия.*

TYUBEGATAN KONIDA FOYDALI QAZILMALAR QAZIB OLISH JARAYONIGA TA'SIR QILAYOTGAN DOLZARB MUAMMOLAR

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Annotatsiya. *Tadqiqot tog'-kon majmualaridagi kengayib borayotgan chiqindi to'planmalarining atrof-muhitga ta'sirini o'rganishga bag'ishlangan bo'lib, u asosan Tyubegatan koni va Dehqonobod kaliy zavodiga (DKZ) qaratilgan. Asosiy xulosalarda boyitish fabrikalaridan qaytib keluvchi chiqindilarda 3,5-5,5% foydali komponentlar mavjudligi ta'kidlanib, ularning saqlanishi va utilizatsiya qilish usullarini takomillashtirish zarurligi ko'rsatib o'tilgan. Tadqiqotda hududning gidrogeologik va geologik sharoitlari tahlil qilinib, yer osti sho'rlangan suvlar va ikki asosiy turdagi chiqindilar: qazib olingan tuz va DKZ ning tuz chiqindilari qayd etilgan. Natijalar chiqindilar umumiy hajmining taxminan 4,78 million tonnani tashkil etishini ko'rsatib, ayniqsa yoz faslida changning oldini olish uchun doimiy geodezik kuzatuvlar o'tkazishni tavsiya etadi. Tadqiqot kengayib borayotgan chiqindi to'planmalarini boshqarishning muhimligini ta'kidlab, ularni kelajakda foydalanish va barqaror rivojlanishni ta'minlash uchun foydali chiqindilarni alohida tarzda utilizatsiya qilishni taklif etadi.*
Kalit so'zlar: *foydali qazilmalarni qazib olish, ag'darma ishlari, geodezik xizmatlar, gidrogeologik sharoitlar.*

Introduction. Nowadays, the location of the dump is expanding and increasing year by year. This means an increase in damage to the environment and atmosphere. In addition, the product returning from the enrichment plant contains more than 3.5-5.5% useful components. It is necessary to determine and improve the parameters of separate storage and disposal of waste products with such content.

During the opening of the mine, it is necessary to place the loose rock mined in

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the process of cutting and preparing the opening mine solders in a separate area.

Each tip is used for a specific purpose and performs a specific task. Taking into account the above, it is necessary to arrange the dumping of loose rock mined from underground in the Tyubegatan mine and the waste from the DPP in such a way that it should be easy and effective to use it for the intended purpose in the future. This is one of the urgent tasks of today [1].

Research methodology. Taking into account the above, the work of placing loose rock mined from underground in Tyubegatan mine and the waste from DPP in the dump was analyzed, and conclusions and proposals were developed to eliminate the shortcomings.

Hydrogeological conditions in Dump: There are underground saline and natural low-saline waters in the area. They contain 100 g/l chloride-sulfate, sodium-calcium mineralized waters from the ground level to a depth of 50-100 meters. All these waters are collected and poured into the Khojampok brackish lake basin. The Tuyasoy river passing through the western side of the salt reservoir is considered as a hydrographic network [3].

Geological structure of Dump: Dump mainly consists of two parts:

1) Salt overturning, which was mined as a result of passing mine solder from the salt layer for the construction of the mine.

2) Overturning of salt waste from DPP processing plant.

In the first salt overturning, dry (moisture content 0.2-0.3%) rock salt is combined with a 10 mm fraction without further processing. The rocks are made of natural additives that are environmentally friendly, without any type of flotation reagents mixed in.

Results and discussion. Location of the tailings dump and salt dump site: The site is located on the eastern side of the ore mining complex, separated by a tributary of the Tuyasoy River. It is located on the eastern elevation of the waste storage area, based on the following: a) for the placement of salty waste mined during the operation of the central section (9.6 million t, 6.4 million m^3) - 16 ha, collecting salt water on the western side of the terrain its area reaches 8.4 m at the point 948.0 m, and up to 14.6 m when climbing to the point 951.6 m.

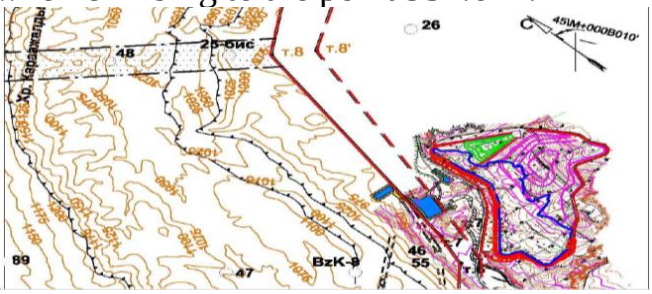

Figure 1. The scheme of the location of the salt dump, which was mined as a result of the passage of mine solder from the salt layer for the construction of the mine, and the dump consisting of salt waste from the DPP.

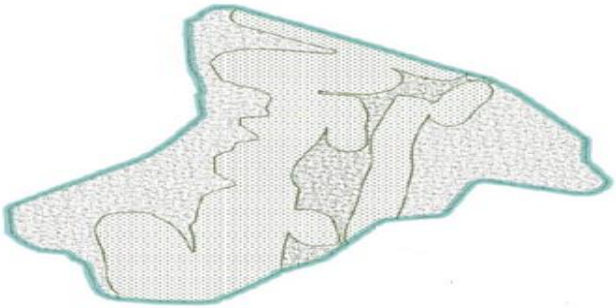

Figure 2. Schematic of the location of the salt dump, which was mined as a result of the passage of mine solder from the salt layer for the construction of the mine.

The total area of the field is 50 ha, of which salt waste is 6.8 ha, and the waste

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storage area from the factory is 43.2 ha [3-5].

Calculation of the waste present in the dump in the mining complex

1. Density p=1.28 t/m^3

Average height h_1=42.6 m

S_1=103645.25 m2 S2=56044.58 m^2

S_{or} =S_1+S_2/2 =79844.92 m2

V_1= S_{or}*h_1=79844.92*42.6= 3406184.17 m^3

Q_1= V_1*p =3406184.17*1.28= 4359915.74 t

2. Average height h_1=12.25 m

S_3=14872.34 m^2 S_4=16956.75 m^2

S_{or} =S_3+S_4/2 =15914.55 m^2

V_2= S_{or}*h_2=15914.55 *12.25= 194953.18 m^3

Q_2= V_2*p =194953.18 *1.28= 249540.07 t

3. Average height h_1=8.58 m

S_5=12905.36 m^2 S_6=18918.25 m^2

S_{or} =S_5+S_6/2 =15911.805 m^2

V_3= S_{or}*h_3=15911.805*8.58 = 136523.29 m^3

Q_3= V_3*p =136523.29*1.28= 174749.81 t

Q=Q_1+Q_2+Q_3=4359915.74+249540.07 +174749.81=4784205.62 t

Solution: Conduct and monitor permanent marksheyder services around Dump.

Conclusion. This article demonstrates the necessity of waste management in mining operations, emphasizing the environmental impacts of waste disposal. Recommendations provided here could contribute to enhanced waste management solutions, leveraging modern surveying and monitoring technology to achieve sustainable and environmentally-friendly mining practices.

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